

Engineer Assist™ Online:

“...incorporates the knowledge that Bently Nevada’s Machinery Diagnostic Services engineers have gained in forty years of analyzing machine malfunctions on all types of machinery around the world...”

by Dave Burba

Staff Writer

Bently Nevada Corporation

Machinery monitoring and diagnostic systems have evolved to serve the business need for cost-effective ways to manage rotating machinery. To keep processes running, you must have simple vibration information to warn you before a machine fails. The solution is to install vibration transducers and monitors on machines. To maximize machinery life and minimize downtime, you must be able to more accurately assess machinery condition. The solution is to install diagnostic systems and to train vibration specialists in proper diagnostic procedure. With this added information, vibration specialists can safely run machines longer and better schedule required maintenance. Now, plant management is looking for ways to automate the machinery diagnostic procedure. They are looking for software that will make their machinery diagnostic engineers more productive. This software is called an expert system. The best expert system for rotating machinery diagnostics is Bently Nevada’s Engineer Assist Online.

Plant managers can both increase the timeliness and reduce the cost of vibration analysis with an expert system. Expert systems are in use today in almost all industries. They are computer programs that validate the decision-making process of someone with expertise in that field. Expert systems sort through data according to well-defined

rules, determine if a problem exists and suggest solutions. Managers use them because people with a similarly wide range of expertise are hard to find and expensive to hire.

Engineer Assist Online is an expert system designed to increase the efficiency of machinery diagnostics. Engineer Assist Online reviews all the data that a machine’s vibration and process transducers generate, and converts critical data to “actionable information.” Its reports highlight potential problems, suggest remedies, and provide the reasoning used to reach its conclusions. The vibration specialist can use this information to quickly reach conclusions about the machine’s condition. Plant managers can use this information to maximize production while minimizing maintenance costs. Bently Nevada’s Machinery Diagnostic Services (MDS) vibration experts can view the information remotely to help diagnose problems over the phone, reducing your need for an onsite vibration expert. Everyone works more productively because Engineer Assist Online only brings important information to their attention.

Engineer Assist Online was developed by Bently Nevada Corporation in conjunction with Bently Rotor Dynamics Research Corporation (BRDRC), Bently Nevada’s research subsidiary. It incorpo-

rates the knowledge that Bently Nevada’s Machinery Diagnostic Services engineers have gained in forty years of analyzing machine malfunctions on all types of machinery around the world. It uses methodologies developed by BRDRC scientists and engineers to effectively analyze problems. The experience built into it may be the best reason to choose Engineer Assist Online.

Another reason to choose Engineer Assist Online is that it can be entirely automated. The computer can be networked with computers that acquire machinery data. After Engineer Assist Online is initially configured, it automatically acquires the data it needs to perform machinery audits. Engineer Assist Online can automatically generate reports, on a time schedule or when a vibration alarm occurs. An engineer at your plant only needs to enter your plant’s initial configuration once. Contrast this with systems that require the engineer to manually enter vibration readings each time an audit is performed. Engineer Assist Online is a much more efficient and error-free system.

Engineer Assist Online automatically verifies the integrity of the data acquisition system and the validity of the data it transmits. It looks for indications that probes are miswired, that the data acquisition computer is misconfigured, that the waveform data is noisy or clipped, and other potential problems that could lead to erroneous diagnoses.

Engineer Assist™ Online outperforms session-driven systems

Engineer Assist Online is unmatched by other vibration analysis expert systems! It uses all the information in a vibration signal. It analyzes data with a sophisticated set of field-tested rules. It clearly explains diagnostic, operation and repair options. It completely automates vibration data acquisition, processing, analysis and report generation. Other, session-driven expert systems analyze only a portion of the vibration signal, according to simpler rules which are sometimes not explained. Session-driven systems also require a Machinery Specialist to manually enter data prior to each audit. Compare Engineer Assist Online with a typical session-driven expert system in the features that make an expert system valuable:

Valuable expert system feature	Engineer Assist Online	A session-driven expert system
Runs without attention from a Machinery Specialist	Yes	No
Machine audits are automated	Yes	No
Audits are performed in a time-efficient manner	Yes	No
Input data is verified and validated	Yes	No
Uses all required information, including process data	Yes	No
Uses trend data in audits	Yes	No
Produces reports especially for Engineering and Management	Yes	No
Reports contain Root Cause Analysis	Yes	No

Engineer Assist Online is easy to use. Because it can be automated, Engineer Assist Online doesn't require an engineer to enter (sometimes subjective) data before each machinery audit. Once Engineer Assist Online is configured, reports are easy to generate. Managers and operators, who might not have the detailed machine knowledge necessary to generate reports on other systems, will find Engineer Assist Online easy to use. Experience shows that systems that are difficult to use are not used.

Engineer Assist Online can differentiate between many different types of malfunctions because it uses all the information contained in a vibration signal. In addition to amplitude and frequency, it uses the form of the vibration, the amplitudes and the phase lag angles of filtered vibration components (1X and 2X), shaft centerline position, trend and process data. BRDRC's research has shown that this information is essential

to distinguish between malfunctions that exhibit similar vibration amplitude and frequency characteristics.

The reports that Engineer Assist Online generates include summary reports, intended for plant executives, that present an overview of problems found and recommendations on continued operation and corrective action. More detailed reports are available for the vibration specialist. They explain how the conclusions were reached and include supporting data. Reports can cover an individual bearing, a machine or an entire machine train.

Engineer Assist Online can help train everyone who uses it. Its hypertext-linked help screens explain vibration diagnostic terminology and methodology. Its reports can explain how its conclusions were reached. It is almost like having a Bently Nevada MDS engineer working with your employees.

Bently Nevada MDS engineers, or your own experts, can view Engineer Assist Online's information from a remote location, reducing their travel time and expense. With modems and a telephone line, one Engineer Assist computer can access another, moving information to the people who need it.

Engineer Assist Online can increase your employees' proficiency and productivity. Engineer Assist Online can save your plant money, in increased productivity and machine availability. It is the expert system designed by the experts in machinery diagnostics. It is the solution plant managers need to help automate and speed machinery diagnostics. Engineer Assist Online is the best expert system for rotating machinery diagnostics. For more information on Engineer Assist Online, contact your nearest Bently Nevada sales representative. ■